

REMARKS

Claims 1, 4-8, 10-19, and 21-49 will be pending upon entry of the present amendment. Claims 6-8, 10-15, 17-19, 21-23, 27, 31-33, and 36-41 are withdrawn pending allowance of a generic claim.

Applicants thank the Examiner for indicating the allowability of claims 24-26, 28-30, 34, 35, and 42-49.

Claim 5 has been amended to clarify the scope thereof. This amendment is not made for purposes of patentability, or to overcome prior art.

The Examiner has rejected claims 1, 4, 5, and 16 under 35 U.S.C. § 102(b) as being anticipated by Cozad (U.S. 6,160,243).

Prior to addressing the claim rejections, applicants wish to discuss some aspects of the Cozad reference to simplify the discussion of the rejections.

Cozad is directed generally to thermally conductive fluid boilers. In each embodiment, Cozad includes a resistive heater to provide thermal energy to the boiler. The heater is controlled by a control circuit to regulate the current through the heater, thereby controlling the temperature output (*see, for example*, column 3, lines 54-60). In order to control the relatively high current required to drive the heater, a power transistor is provided, which is in turn controlled by the control circuit. Examples of such transistors are shown in the circuit diagrams of Figures 7 and 9 at reference numerals 92 and 102, respectively. Though no transistor is shown in the diagrams of Figures 5 and 11, they may be inferred by the presence of the load resistors 64 shown in those figures. As would be recognized by one of ordinary skill in the art, these load resistors are employed to obtain a desired bias on an associated transistor and to limit current flowing therethrough. This is an extremely common practice, especially in circuits employing bipolar transistors, as illustrated in Cozad, and is most clearly shown in Figure 9, where the load resistor is coupled directly to the emitter of the transistor 102.

As is well known, in such circuits the transistor and the load resistor will also produce heat in proportion to the current passing through the series circuit of heater, transistor, and resistor. Cozad clearly acknowledges this well known phenomenon by placing the load

resistors in or on the boiler, thereby converting what would otherwise be waste heat into a secondary heat source. In the embodiment of Figures 6 and 7, a self-biased transistor 92 is employed, which results in a greater degree of heat being generated in the transistor itself. Accordingly, Cozad has placed this transistor on the boiler, for the same reason.

However, it is important to note that these measures, i.e., placing the load resistors or the transistor 92 on the boiler are merely incremental economies that serve to prevent waste of heat that is an inevitable byproduct of the operation of the circuit. Clearly, Cozad does not consider the transistor 92 a primary heat source or as being capable of providing sufficient heat to operate independent of the heater. In particular, the transistor 92 is explicitly described as a secondary heat source (see column 4, line 46). One of ordinary skill will recognize that the transistor 92 of Figures 6 and 7 will produce a comparatively small proportion of the total heat generated, since, as the transistor is controlled to increase current flow through the heater for the purpose of increasing heat output, resistance in the transistor will be reduced. Accordingly, the voltage drop across the transistor will diminish as overall heat output increases, and an ever greater proportion of the heat will be generated by the heater.

Finally, Cozad makes clear that it is the heater 54 that is controlled to produce a predetermined temperature, and that operation and control of the transistor is primarily for the purpose of controlling the heater 54, not as an independent or primary heat source (see column 3, lines 54-57 and column 5, lines 5-7).

Claim 1 recites, *inter alia*, "at least one transistor formed in the semiconductor material and operable to generate heat above a selected threshold" The term *generate heat*, as used in claim 1, refers to heat produced within the transistor, rather than heat produced by some outside element controlled by the transistor. This is clear from a review of the specification (see, for example, paragraphs beginning at page 6, line 14 and page 8, line 3). Cozad fails to anticipate at least this limitation of claim 1. The Examiner has cited the transistor 92 of Figures 6 and 7 as being analogous to the transistor of claim 1. However, Cozad states that this transistor is secondary to the resistive heater 54, and there is no teaching that this transistor is "operable to generate heat above a selected threshold," as recited in claim 1. In contrast, Cozad teaches that the *heater* 54 is controlled to produce heat at "a predetermined temperature"

(column 3 lines 55-57). It would be inappropriate, in the absence of a clear teaching, to interpret Cozad as providing a transistor operable to generate heat above a selected threshold.

This is especially true in view of the fact the *every embodiment* of Cozad includes a resistive heater 54, while the only embodiment that makes use of heat generated by a transistor describes that transistor as a *secondary* heat source.

Clearly, claim 1 is allowable over Cozad, together with its dependent claims, including claims 4, 5, and 16.

Claims 5 and 16 are also allowable on their own merits. Claim 5 recites, “a dielectric layer ... being positioned between the semiconductor material and the chamber.” Claim 16 recites, “a dielectric layer extending over a first face of the semiconductor material with the fluid to be heated positioned adjacent to the dielectric layer on a side thereof opposite the transistor.” Though their scopes differ, it is clear that the dielectric layer recited in each of these claims lies somewhere between the heat-generating transistor and the chamber. In contrast, Cozad’s insulating substrate 58, cited by the Examiner as being analogous to the dielectric layers of claims 5 and 16, is positioned on the opposite side of the boiler 90 from the heater. Accordingly, claims 5 and 16 are not anticipated by Cozad, and are allowable thereover.


The Examiner has indicated that he considers claim 1 to be generic (see Restriction Requirement of December 2, 2003). While applicants agree with the Examiner that, if claim 1 is found to be allowable, the withdrawn claims will also be allowable, applicants note that claim 1 recites, in part, “a fluid to be heated positioned within the fluid retaining chamber” This limitation is not found in any of the other independent claims currently pending, and is not considered by the applicants to be an element of the other claims. Likewise, no limitation is to be construed as part of a claim unless recited in that claim or one from which it depends.

Applicants believe that all the claims now pending are in condition for allowance, and respectfully request rejoinder of the withdrawn claims, and a Notice of Allowance. In the event the Examiner finds minor informalities that can be resolved by telephone conference, the Examiner is urged to contact Applicants’ undersigned representative at (206) 694-4848 in order to expeditiously resolve prosecution of this application.

Application No. 10/029,533
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The Director is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090.

Respectfully submitted,
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HHB:wt

Enclosures:

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